

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



. LEGI SALI BARRAD KIN BARRADIK BARRADIK BARRADIK BARRADIK BARRADIK BARRADIK BIRRADIK BARRADIK BARRADIK BARRADI

(43) International Publication Date 11 March 2004 (11.03.2004) (10) International Publication Number WO 2004/020406 A2

(51) International Patent Classification7:

C07D

(21) International Application Number:

PCT/US2003/026968

(22) International Filing Date: 29 August 2003 (29.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/406,917

30 August 2002 (30.08.2002) US

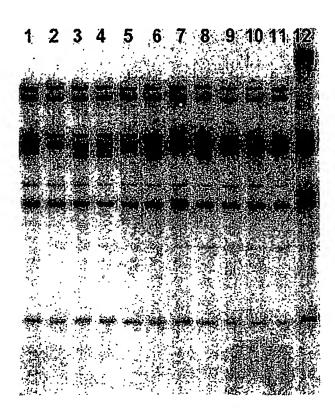
- (71) Applicant (for all designated States except US): INTER-NATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH [BD/BD]; Mohakhali, 1000 Dhaka (BD).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): NAIR, G., Balakrish [IN/BD]; International Centre for Diarrhoel Disease Research, Bangladesh, Mohakhali, 1000 Dhaka (BD). FARUQUE, S., M. [BD/BD]; International Centre for Diarrhoeal Disease Research, Bangladesh, Mohakhali, 1000

Dhaka (BD). SACK, David, A. [US/BD]; International Centre for Diarrhoeal Disease Research, Bangladesh, Mohakhali, 1000 Dhaka (BD).

- (74) Agent: HOBBS, Ann, S., Ph.D.; VENABLE, BAETJER, HOWARD & CIVILETTI, LLP, 1201 New York Avenue, N.W., Suite 1000, P.O. Box 34385, Washington, DC 20043-9998 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

[Continued on next page]

(54) Title: VARIANTS OF VIBRIO CHOLERAE O1 BIOTYPE E1 TOR WITH ATTRIBUTES OF CLASSICAL BIOTYPE



(57) Abstract: The invention relates to novel types of *Vibrio cholerae* that are useful for vaccines and immunological compositions.